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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,251	08/26/2003	Masato Yoshikawa	Q77129	2079

7590 04/21/2004

SUGHRUE, MION, ZINN, MACPEAK & SEAS
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EXAMINER	
CHACKO DAVIS, DABORAH	

ART UNIT	PAPER NUMBER
1756	

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/647,251	YOSHIKAWA ET AL.	
	Examiner	Art Unit	
	Daborah Chacko-Davis	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-4 and 20-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-4 and 20-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/407,703.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *08/26*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2-4, 20-22, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 4,846,541 (Miura et al) in view of U. S. Patent No. 5,346,600 (Nieh et al) further in view of U. S. Patent No. 5,741,403 (Tenhover et al).

Miura, in col 1, lines 40-43, in col 2, lines 38-56, and lines 61-64, in col 3, lines 25-35, and in col 4, lines 38-39, discloses a method for controlling the refractive index of a dry plating film that comprises providing a silicon carbide sinter target (starting source), and subjecting the silicon carbide to dry plating (sputtering) while controlling the concentration of the reactive gas (oxygen-containing), and controlling the electric power (maintaining the power at 200 Watts) to the target, thereby forming a thin film primarily made of silicon carbide that has a refractive index ranging from 1.4 - 3.4. Miura, in col 2, lines 49-52, and in col 3, lines 28-30, discloses that the silicon carbide used as the target (starting source) consists essentially of a silicon carbide sintered product (claims 2, 4, and 20). Miura, in col 1, lines 20-34, and in col 2, lines 19-54, discloses a method of making a dry plating film (built-up) comprising providing a silicon carbide target (starting source), and subjecting the target to a deposition process (dry plating process) while changing (adjusting) the concentration of the reactive gas during

deposition thereby producing a thin film of varying refractive indices throughout the thickness of the film (claim 22). Miura, in col 3, lines 32-34, and lines 57-59, and in col 4, lines 10, and 14 discloses that the ratio of the reactive gas (oxygen) is within the range of 0 to 20% (claim 3).

The difference between the instant claims and Miura is that Miura does not disclose the sintering of a homogenous mixture that has a density of 2.9g/cm^3, and the homogenous mixture is made of silicon carbide powder and a nonmetallic sintering aid. Miura does not disclose that the reactive gas includes a nitrogen-containing gas. Miura does not disclose that the non-metallic sintering aid is selected from coal tar pitch, phenolic resins, furan resins, epoxy resins, glucose, sucrose, cellulose and starch (claim 21).

Nieh, in col 6, lines 33-39, in col 8, lines 59-65, in col 10, lines 32-35, discloses that in sputter deposition processes (SiC) the reactive gases required for creating the plasma includes an inert gas, and a reactive gas such as nitrogen.

The difference between the claims and the combination of Miura in view of Nieh is that the combination does not disclose the sintering of a homogenous mixture that has a density of 2.9 g/cm^3 , and is made of silicon carbide powder and a non-metallic sintering aid.

Tenhover, in col 5, lines 53-64, in col 8, lines 14-29, and in col. 9, lines 1-30, discloses the sintering of a homogenous mixture of silicon carbide powder and a non-metallic sintering aid to produce a sintered silicon carbide target that has a density of 2.9g/cm^3. Tenhover, in col 5, lines 55-62, discloses that a source of an amorphous

carbon, an organic resin binder, various dispersants, lubricants or diluents can be used as sintering aids.

Therefore, it would be obvious to a skilled artisan to modify Miura by employing nitrogen as the reactive gas as taught by Nieh because Nieh, in col 10, lines 32-35, discloses that it is advantageous to use nitrogen as the reactive gas in reactive sputtering. Although, Miura does not teach that the refractive indices throughout the film varies in a particular waveform, Miura teaches that the film produced has varying indices of refraction throughout the thickness of the film and therefore the SiC film produced by Miura would inherently possess a wave form of thickness variation. Therefore, it would be obvious to a skilled artisan to modify Miura by employing the method of sintering as taught by Tenhover because Miura in col 3, line 29, line 32, and line 58, discloses that a sintered sputter target is preferably used for sputter depositing a silicon carbide film.

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd

April 19, 2004.

MARK F. HUFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700